CLAIMS

1. A computer system configured by machine instructions as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen in accordance with respective estimated collection efficiencies from among a candidate set of the regions; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

2. A computer system as defined in claim 1 wherein the maximum age is two.

3. A computer system as defined in claim 1 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

4. A computer system configured by machine instructions as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen, in accordance with a selection criteria separate from object age, from among a candidate set of the regions; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

5. A computer system as defined in claim 4 wherein the maximum age is two.

6. A computer system as defined in claim 4 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

7. A computer system configured by machine instructions as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen from among a candidate set of the regions in accordance with such a selection criterion that the resultant collection set sometimes includes a region whose age is less than that of a region in the candidate set omitted from the collection set and sometimes includes a region whose age is greater than that of a region that was in the candidate set but was omitted from the collection set; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

8. A computer system as defined in claim 7 wherein the maximum age is two.

9. A computer system as defined in claim 7 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

10. For reclaiming dynamically allocated memory in a computer system, a method comprising employing the computer system to:

A) treat at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collect in respective collection increments collection sets chosen in accordance with respective estimated collection efficiencies from among a candidate set of the regions; and

C) in at least one mode of operation, so place dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

11. A method as defined in claim 10 wherein the maximum age is two.

12. A method as defined in claim 10 wherein respective age values are assigned to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

13. For reclaiming dynamically allocated memory in a computer system, a method comprising employing the computer system to:

A) treat at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collect in respective collection increments collection sets chosen, in accordance with a selection criteria separate from object age, from among a candidate set of the regions; and

C) in at least one mode of operation, so place dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

14. A method as defined in claim 13 wherein the maximum age is two.

15. A method as defined in claim 13 wherein respective age values are assigned to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

16. For reclaiming dynamically allocated memory in a computer system, a method comprising employing the computer system to:

A) treat at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collect in respective collection increments collection sets chosen from among a candidate set of the regions in accordance with such a selection criterion that the resultant collection set sometimes includes a region whose age is less than that of a region in the candidate set omitted from the collection set and sometimes includes a region whose age is greater

than that of a region that was in the candidate set but was omitted from the collection set; and

C) in at least one mode of operation, so place dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

17. A method as defined in claim 16 wherein the maximum age is two.

18. A method as defined in claim 16 wherein respective age values are assigned to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

19. A storage medium containing computer instructions readable by a computer system to configure the computer system as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen in accordance with respective estimated collection efficiencies from among a candidate set of the regions; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

20. A storage medium as defined in claim 19 wherein the maximum age is two.

21. A storage medium as defined in claim 19 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

22. A storage medium containing computer instructions readable by a computer system to configure the computer system as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen, in accordance with a selection criteria separate from object age, from among a candidate set of the regions; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

23. A storage medium as defined in claim 22 wherein the maximum age is two.

24. A storage medium as defined in claim 22 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

25. A storage medium containing computer instructions readable by a computer system to configure the computer system as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen from among a candidate set of the regions in accordance with such a selection criterion that the resultant collection set sometimes includes a region whose age is less than that of a region in the candidate set omitted from the collection set and sometimes includes a region whose age is greater than that of a region that was in the candidate set but was omitted from the collection set; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

26. A storage medium as defined in claim 25 wherein the maximum age is two.

27. A storage medium as defined in claim 25 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

28. An electromagnetic signal representing computer instructions readable by a computer system to configure the computer system as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen in accordance with respective estimated collection efficiencies from among a candidate set of the regions; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than

a maximum age greater than one also contains any object of a different age.

29. An electromagnetic signal as defined in claim 28 wherein the maximum age is two.

30. An electromagnetic signal as defined in claim 28 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

31. An electromagnetic signal representing computer instructions readable by a computer system to configure the computer system as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen, in accordance with a selection criteria separate from object age, from among a candidate set of the regions; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

32. An electromagnetic signal as defined in claim 31 wherein the maximum age is two.

33. An electromagnetic signal as defined in claim 31 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacu-

ates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

34. An electromagnetic signal representing computer instructions readable by a computer system to configure the computer system as a garbage collector that:

A) treats at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) collects in respective collection increments collection sets chosen from among a candidate set of the regions in accordance with such a selection criterion that the resultant collection set sometimes includes a region whose age is less than that of a region in the candidate set omitted from the collection set and sometimes includes a region whose age is greater than that of a region that was in the candidate set but was omitted from the collection set; and

C) in at least one mode of operation, so places dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

35. An electromagnetic signal as defined in claim 34 wherein the maximum age is two.

36. An electromagnetic signal as defined in claim 34 wherein the garbage collector assigns respective age values to the regions without recording ages separately for all dynamically allocated objects, the age assigned each region into which the collector evacuates potentially reachable objects from a collection-set region assigned an age less than the maximum age being one greater than the age assigned to that collection-set region.

37. A garbage collector comprising:

A) means for treating at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) means for collecting in respective collection increments collection sets chosen in accordance with respective estimated collection efficiencies from among a candidate set of the regions; and

C) means for, in at least one mode of operation, so placing dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

38. A garbage collector comprising:

A) means for treating at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) means for collecting in respective collection increments collection sets chosen, in accordance with a selection criteria separate from object age, from among a candidate set of the regions; and

C) means for, in at least one mode of operation, so placing dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.

39. A garbage collector comprising:

A) means for treating at least a generation of a heap in which objects are dynamically allocated as divided into regions;

B) means for collecting in respective collection increments collection sets chosen from among a candidate set of the regions in accordance with such a selection criterion that the resultant collection set sometimes includes a region whose age is less than that of a region in the candidate set omitted from the collection set and sometimes includes a region whose age is

greater than that of a region that was in the candidate set but was omitted from the collection set; and

C) means for, in at least one mode of operation, so placing dynamically allocated objects that no candidate-set region that contains an object whose age is less than a maximum age greater than one also contains any object of a different age.